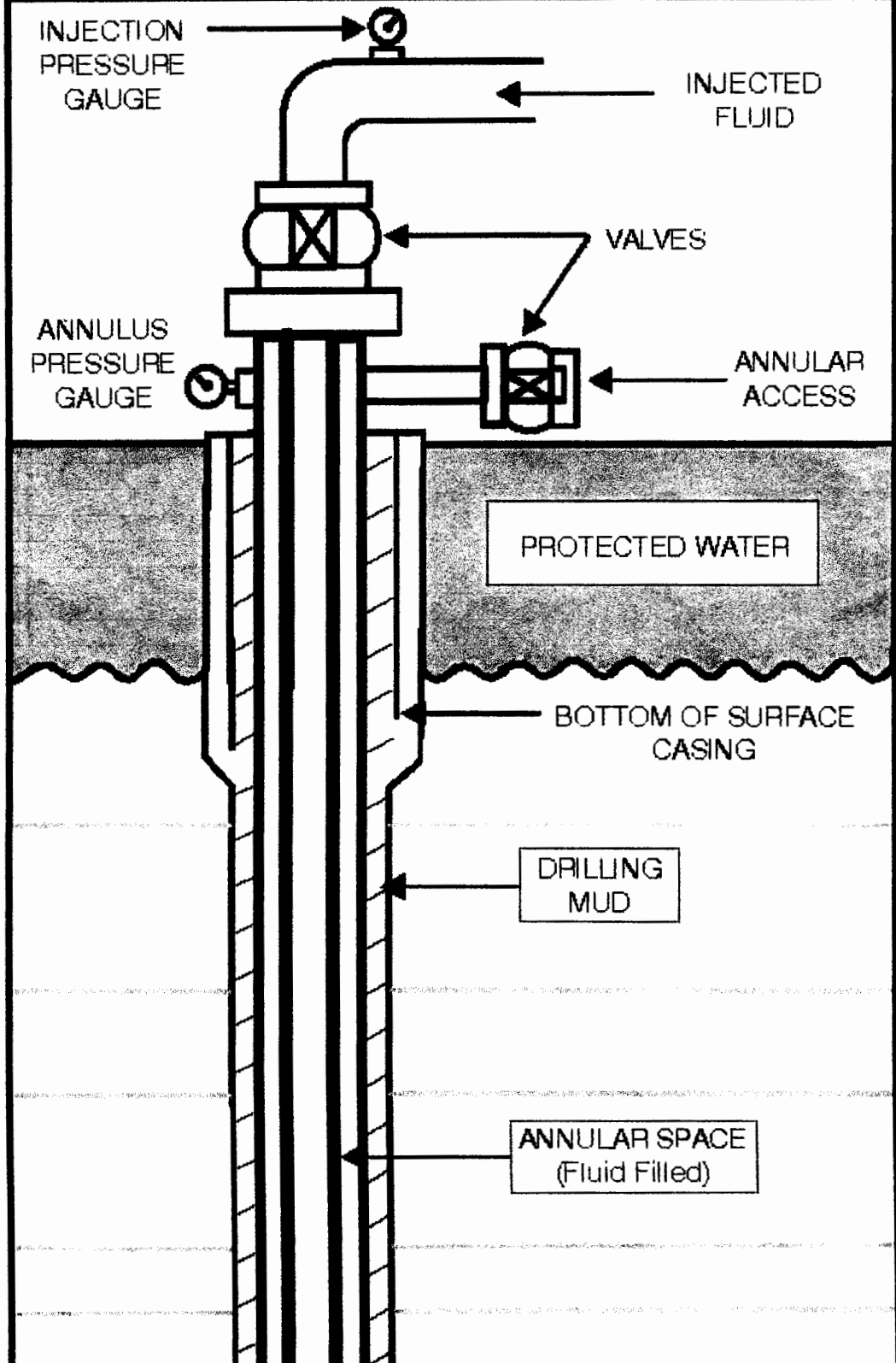


A TYPICAL CLASS II INJECTION WELL



with the production of oil and gas. However, small quantities of substances used in the drilling, completion and production operations of a well may be mixed in the waste stream. Some of these materials that may enter into the oilfield brine waste stream are minor amounts of drilling mud, fracture fluids and well treatment fluids. Also, since the produced water is associated with crude oil and natural gas, small amounts of residual hydrocarbons can also be found in the produced water.

Can I be guaranteed that saltwater disposal wells will not contaminate my water well?

The purpose of Railroad Commission's Underground Injection Control Program's permitting process, well monitoring process and field inspections is to prevent pollution. Proper well completion, injection procedures and monitoring ensures that fresh water sources are not impacted by saltwater.

In addition, there are no known instances of ongoing groundwater contamination as a result of saltwater disposal activities in the Barnett Shale play—the state's largest natural gas play that has been actively producing natural gas since 1997.

To protect groundwater, the Railroad Commission's rules for the construction of disposal wells are specially designed to require multiple layers of cement and steel to ensure that shallow, usable quality water is not impacted. Disposal wells inject saltwater into underground formations, sometimes over a mile in depth, into fields that are already full of naturally occurring saltwater. In contrast, wells that supply fresh water usually are no deeper than a few hundred feet.

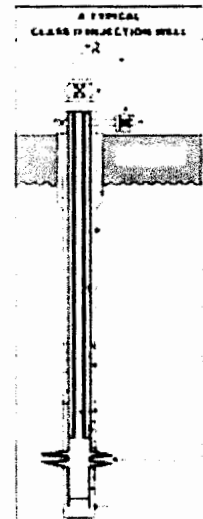
In addition to construction standards, the permitting process for saltwater disposal wells involves numerous requirements and safeguards including: notice to the public; hearing opportunities; a review of area geology; and required areas of review near the proposed wells to determine if there are other wells penetrating the same geologic horizon proposed for disposal.

What are the construction standards for a disposal well?

Specifically, a disposal well's construction standards require three layers of casing to ensure groundwater is protected. The first protection layer is surface casing—a steel pipe that is encased in cement that reaches from the ground surface to below the deepest usable quality groundwater level. Surface casing acts as a protective sleeve through which deeper drilling occurs. The second protection layer is the production casing—a pipe placed in the wellbore to the well's total depth and permanently cemented in place. The third protection layer is the injection tubing string and packer that conducts the injected water down through the injection tubing string and production casing to perforations at the bottom of the well to inject the water into an underground formation. With this well construction, all three protection layers must fail at the same time to impact groundwater.

See disposal/injection well illustration to the right:

(Illustration Source: New Mexico Oil Conservation Division, Energy, Minerals and Natural Resources Department, New Mexico's Underground Injection Control (UIC) Program, Class II Well Facts)



Select well to view larger image

How often are these wells inspected?

The Railroad Commission inspects commercial disposal wells (wells that take produced water from various operators for a fee) at least once per year.

There is no "schedule" for non-commercial disposal or injection well inspections. These wells are inspected based on several factors including their location (near sensitive environmental areas or public areas) and the operator's compliance record.

During Fiscal Year 09, there were 3,640 inspections related to Commercial Disposal Wells and 12,278 inspections related to non-commercial Disposal/Injection Wells.

In addition to inspections, each saltwater disposal well is required to be tested for mechanical integrity to show there are no leaks before the well begins to inject fluid. After this initial test, wells also must undergo mechanical integrity tests at least once every five years. The Railroad Commission's standard mechanical integrity test (MIT) is designed to identify small leaks before they become catastrophic failures. Wells that fail MITs, must be shut in immediately and repaired until they pass an MIT, or plugged within 60 to 90 days.